



# Australian Bureau of Statistics

## **6291.0.55.001 - Labour Force, Australia, Detailed - Electronic Delivery, March 2018**

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## **Summary**

### **Main Features**

Data from the monthly Labour Force Survey are released in two stages. The Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) and Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003) are part of the second release, and include detailed data not contained in the Labour Force, Australia (cat. no. 6202.0) product set, which is released one week earlier.

The Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) is released monthly. Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003) includes data only collected in February, May, August and November (including industry and occupation).

Since these products are based on the same data as the Labour Force, Australia (cat. no. 6202.0) publication, the 6202.0 Labour Force, Australia Explanatory Notes are relevant to both releases.

## **What's New In The Labour Force**

### **WHAT'S NEW IN THE LABOUR FORCE**

#### **2018 ANNUAL SEASONAL RE-ANALYSIS**

Every year, the ABS conducts an "Annual Seasonal Re-analysis" (ASR) of the Labour Force time series. The outcomes of the 2018 review to seasonally adjusted and trend estimates have been incorporated in the estimates published in this issue of Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001). Overall, the revisions arising from the annual seasonal re-analysis have been minimal.

For further information on the 2018 ASR, please see the article Annual Seasonal Re-analyses in this release of Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001).

#### **IMPROVEMENTS TO TREND ESTIMATION**

As part of the 2018 Annual Seasonal Re-analysis, the ABS has also implemented some minor improvements to trend estimation for Labour Force time series. These improvements will reduce the extent of revisions in trend series over time, providing particular benefits for series with smaller populations (eg. states and territories with smaller populations).

For further information outlining the improved approach, including impacts of the change to trend

estimates, please see the article "Improvements to Trend Estimation" in this release of Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001).

The methods used to calculate seasonally adjusted estimates has not been changed.

## **UPDATE ON MONTHLY UNDEREMPLOYMENT ESTIMATES - TREND AND SEASONALLY ADJUSTED DATA**

As previously advised, the implementation of monthly underemployment and underutilisation measures has been delayed.

The ABS will provide further advice on the revised implementation schedule in the next issue of Labour Force, Australia (cat. no. 6202.0). We thank users for their patience and understanding with this delay.

## **Insights from the Original Data**

### **INSIGHTS FROM THE ORIGINAL DATA**

#### **SAMPLE COMPOSITION**

The Labour Force Survey sample can be thought of as comprising eight sub-samples (or rotation groups), with each sub-sample remaining in the survey for eight months, and one rotation group "rotating out" each month and being replaced by a new group "rotating in". This sample rotation is important in ensuring that seven-eighths of the sample are common from one month to the next, to ensure that changes in the estimates reflect real changes in the labour market, rather than the sample. In addition, the replacement sample is generally selected from the same geographic areas as the outgoing one, as part of a representative sampling approach.

When considering movements in the original estimates, it is possible to decompose the sample into three components:

- the matched common sample (survey respondents who responded in both February and March);
- the unmatched common sample (survey respondents who responded in March but who did not respond in February, or vice versa); and
- the incoming rotation group (survey respondents who replaced respondents who rotated out in February).

The detailed decomposition of each of these movements is included in the data cube 'Insights From the Original Data'.

In considering the three components of the sample, it is important to remember that the matched common sample describes the change observed for the same respondents in February and March, while the other two components reflect differences between the aggregate labour force status of different groups of people.

While the rotation groups are designed to be representative of the population, the outgoing and incoming rotation groups will almost always have somewhat different characteristics, as a result of the groups representing a sample of different households and people. The design of the survey, including the weighting and estimation processes, ensures that these differences are generally relatively minor and seeks to ensure that differences in characteristics of rotation

groups do not affect the representativeness of the survey and its estimates. Monthly estimates are always designed to be representative of their respective months, regardless of the relative contribution of the three components of the sample.

## **INCOMING ROTATION GROUP**

In original terms, the incoming rotation group in March 2018 had a higher employment to population ratio than the group it replaced (62.0 per cent in February, up to 63.1 per cent in March 2018), and was higher than the ratio for the entire sample (62.0 per cent).

The full-time employment to population ratio of the incoming rotation group was higher than the group it replaced (42.5 per cent in February 2018 and up to 43.4 per cent in March 2018), and higher than the entire sample (42.1 per cent).

The unemployment rate of the incoming rotation group was 0.1 percentage point lower than the whole sample (5.8 per cent, compared to 5.9 per cent), and it replaced a group with a higher rate (5.9 per cent in February). Its participation rate was above that of the sample as a whole (67.0 per cent, compared to 65.8 per cent), and also above the group it replaced (65.8 per cent in February).

## **OUTGOING ROTATION GROUP**

In looking ahead to the April 2018 estimates, the outgoing rotation group in March 2018, which will be replaced by a new incoming rotation group in April 2018, has a lower employment to population ratio (60.6 per cent in March 2018) compared to the sample as a whole (62.0 per cent). The full-time employment to population ratio (41.2 per cent) is lower than the ratio for the entire sample (42.1 per cent).

In original terms, the unemployment rate for the outgoing rotation group in March 2018 is higher than the sample as a whole (6.1 per cent, compared to 5.9 per cent). The participation rate for the outgoing rotation group in March 2018 is 64.5 per cent, which is lower than the rate for the whole sample (65.8 per cent).

## **THE IMPORTANCE OF TREND DATA**

As the gross flows and rotation group data are presented in original terms they are not directly comparable to the seasonally adjusted and trend data discussed elsewhere in the commentary, and are included to provide additional information for the original data. Since the original data are unadjusted, they have a considerable level of inherent sampling variability, which is specifically adjusted for in the trend series. The trend data provide the best measure of the underlying behaviour of the labour market and are the focus of the commentary in this publication.

# **Annual Seasonal Re-analysis**

## **ANNUAL SEASONAL RE-ANALYSIS**

### **INTRODUCTION**

The annual seasonal re-analysis of the Labour Force series was conducted on estimates up to February 2018. The seasonally adjusted and trend estimates in this issue reflect adjustments made as a result of this re-analysis.

While combined seasonal factors for the complete time series are estimated each month, the parameters and prior corrections are reviewed annually at a more detailed level than is possible in the monthly processing cycle. The annual seasonal re-analysis takes into account each additional year's original data and assesses the appropriateness of seasonal adjustment parameters and prior corrections. In particular, in this annual seasonal re-analysis the ABS has reviewed the parameters for the highly seasonal periods of December and January, and as such, minor revisions are evident over these months.

Also implemented as part of this year's annual seasonal re-analysis are improvements to trend estimation, including minor changes to the trend filter lengths used in Labour Force series. Further information on this can be found in the below section "Improvements to trend estimation".

## **WHAT IS SEASONAL ADJUSTMENT?**

Labour Force data are collected monthly (or quarterly for some topics) using the same methods, which results in original (that is, unadjusted) monthly or quarterly time series. Seasonal adjustment is applied to some of the original series to remove influences that are:

- systematic and calendar related, for example school leavers joining the labour force every February; and/or
- systematic and related to holidays which move around between months but which still occur every year, for example Easter.

Systematic and calendar related influences which have the same timing, same direction and similar magnitude every year, are removed to create the seasonally adjusted series. The presence and size of influences due to moving holidays, the variable timing of the commencement of interviews in January and the timing of supplementary surveys are estimated using a regression-ARIMA framework and also removed. The regression-ARIMA framework enables these influences to be accurately estimated. Without accurate estimation of these effects, the seasonal pattern may be obscured, and the seasonal factors may be less accurate.

The seasonally adjusted series irregular component is removed to create the trend series. Seasonally adjusted and trend series are revised each month to take account of the latest original estimates.

The ABS aims to produce high quality seasonally adjusted estimates that are without systematic related variation.

Seasonally adjusted aggregate hours worked estimates include more extensive corrections for the influence of public holiday and school holiday effects. Each moving holiday is estimated and removed in the aggregate state/territory estimates. State/territory level influences are used to estimate the school and public holiday effects in the Australia and full-time/part-time by sex estimates.

During each annual seasonal re-analysis, the framework for estimating moving holidays and variable timing of the commencement of interviews in January is assessed for appropriateness. This ensures that the impact of these influences are being appropriately estimated from year to year, that assumptions used in the regression-ARIMA framework continue to be valid, and to implement improvements in estimation methodology.

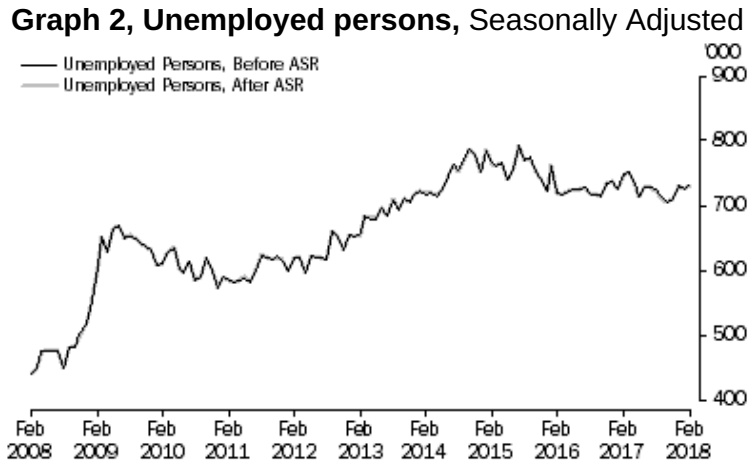
## **IMPACT ON THE LABOUR FORCE DATA**

To account for the changes made to the supplementary survey program from 2014, the seasonal adjustment parameters and prior corrections have been monitored and revised regularly on an

ongoing basis. As a result, revisions to seasonally adjusted and trend estimates arising from the 2018 annual seasonal re-analysis have been minimal.

For the period February 1978 to February 2018, the seasonally adjusted employed persons level series changed by an average absolute monthly value of 1000 persons (0.01%), with the largest revision of 21,000 persons (0.2%) occurring in January 2018. This revision is attributable to the adjustment to account for the highly seasonal periods of December and January. Revisions include the impact of both the normal seasonal adjustment process and the results of the annual seasonal re-analysis. The employed persons trend series changed by an average absolute monthly value of 1,800 persons (0.01%).

The unemployed persons seasonally adjusted series for the period February 1978 to February 2018 changed by an average absolute monthly value of 700 persons (0.1%), with the largest revision of 4,600 persons (0.8%) occurring in March 1988. The unemployed persons trend series also changed by an average absolute monthly value of 700 persons (0.1%).



## ONGOING REVIEW OF METHODOLOGY

As part of a process of continuous improvement, the ABS will continue to explore options for further improving the quality of Labour Force time series. Such investigations may identify further optimisations.

The ABS will continue to provide updates on any developments in this space within Labour Force, Australia (cat. no. 6202.0), ahead of any changes being implemented as part of the 2019 annual seasonal re-analysis.

## **IMPROVEMENTS TO TREND ESTIMATION**

As part of the 2018 Annual Seasonal Re-analysis, the ABS has also implemented some minor improvements to trend estimation for Labour Force time series. These improvements will reduce the extent of revisions in trend series over time, providing particular benefits for series with smaller populations (eg. states and territories with smaller populations).

The improvements to monthly person estimates have been implemented in this issue, with improvements to hours worked estimates to be implemented in the April 2018 issue, and improvements to the quarterly series in the May 2018 issue.

In addition, as part of the improvements to trend estimation, the ABS has also reviewed whether using a filter length other than the standard 13-term Henderson filter would be appropriate for some series. The filter length choice affects the series behaviour extracted and measured by the trend. A 23-term filter length has been deemed optimal in producing high quality trend data and implemented for the following series:

- Unemployed persons, Australian Capital Territory
- Unemployed persons, Northern Territory
- Unemployed persons, Tasmania
- Unemployed persons, Ages 15-19
- Unemployed persons, Full-Time, Ages 15-19
- Unemployed persons, Full-Time, Ages 15-24
- Unemployed persons, Part-Time, Ages 15-24
- Unemployed females, Full-Time, Married
- Unemployed females, Part-Time, Married

For further information on the improved approach, please see the article "Improvements to Trend Estimation" in the February 2018 issue of Labour Force, Australia (cat. no. 6202.0), which has also been republished in this issue.

The methods used to calculate seasonally adjusted estimates will not be changed.

## **Improvements to Trend Estimation**

### **IMPROVEMENTS TO TREND ESTIMATION**

#### **REPUBLISHED ARTICLE**

The following article was published in the February 2018 issue of Labour Force, Australia, Detailed - Electronic Delivery, (cat. no. 6291.0.55.001), and has been republished to coincide with changes to trend estimation in this issue, which were made as part of the recent Annual Seasonal Re-analysis.

#### **INTRODUCTION**

As part of the 2018 Annual Seasonal Re-analysis (ASR) of estimates published in Labour Force, Australia (cat no. 6202.0), the ABS has implemented an improved method of trend estimation. This article outlines details of the new trend method including the benefits and some indicative impacts on Labour Force estimates.

## **BACKGROUND**

Period-to-period movements of the original and seasonally adjusted series are typically volatile due to the inherent variation in the data, captured by the 'irregular' component of the time series decomposition. Smoothing the irregular component of seasonally adjusted series is helpful for identifying the underlying level of socioeconomic activity. The ABS generally publishes the seasonally adjusted estimates of a raw series along with a smoothed version of the data, known as the trend. The process of smoothing seasonally adjusted data is known as "trending". Given there is an inherent and unavoidable level of volatility in original and seasonally adjusted series, the ABS encourages users to analyse both the seasonally adjusted and trend series which complement each other. The trend series provides the best indicator of underlying behaviour of time series. In the case of Labour Force statistics, trend estimates provide the best measure of the underlying behaviour of the labour market. Further information on seasonal adjustment and trend can be found in Time Series Analysis: The Basics.

The ABS established its approach to trend estimation in the late 1980s when trend statistics were first introduced into output. The approach enabled users to calculate the trend for themselves by directly smoothing the published seasonally adjusted series using the Henderson 13-term trend filter. A feature of this approach is that the trend is affected by outliers identified in the estimation of seasonal adjustment factors. While the adopted method supported some users in their interpretation of trend series, it also resulted in some quality compromises. Since the seasonal outliers are not treated, a 'ripple' effect can arise in the trend series in some situations, particularly for series with higher volatility such as those with a high level of sample error. These 'ripples' are effectively spurious turning points.

Over the decades, other national statistical organisations have also moved to publish trend series to complement the seasonally adjusted series. Generally they have adopted the core X-11 ARIMA trend which the ABS will also now adopt.

The key differences between the core X-11 trend and the traditional ABS approach to trend pertain to the treatment of "trend breaks" and the X-11 algorithm's automatic internal corrections applied in the derivation of seasonal factors. The absence of the X-11 algorithm's automatic internal corrections is known to create a "ripple" effect in ABS trend series in some situations, particularly in series with higher levels of volatility, such as those with relatively higher levels of sample error.

## **BENEFITS OF THE NEW TREND METHOD**

A review of the current trend estimation conducted recently found that there are a number of benefits in adopting a more pure definition of the trend.

The improved trend method has a relatively minor impact on the published trend values of labour force estimates at the Australia level and for the larger states, such as New South Wales and Victoria. However, the new method provides particularly strong benefits by removing the "ripple" effects which tend to be more inherent in the current trend series for smaller jurisdictions and lower level estimates. The result of removing these "ripple" effects is trend estimates which are less volatile, and less prone to revision over time.

Improvements to trend estimation have no impact on the estimation of seasonally adjusted estimates. The new method only changes the way in which the irregular component of a time series is removed from the seasonally adjusted data to produce the published trend estimate.

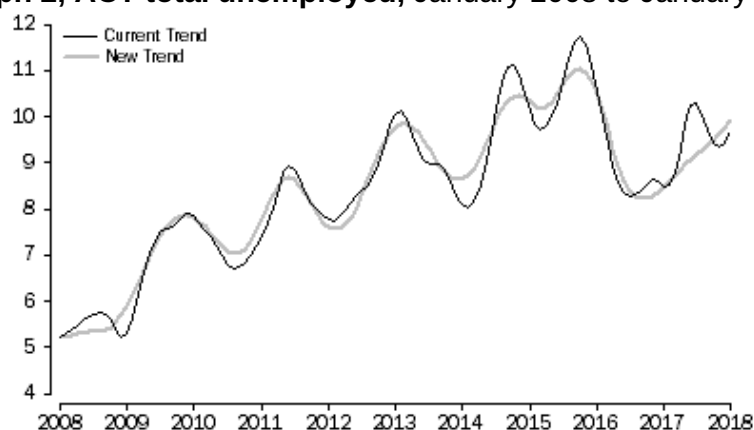
## **IMPACTS ON LABOUR FORCE ESTIMATES**

The following graphs provide an illustration of the impacts on Labour Force estimates. These are indicative impacts only, based on data up to January 2018.

**Graph 1, Australia total unemployed, January 2008 to January 2018**



**Graph 2, ACT total unemployed, January 2008 to January 2018**



**Graph 3, NT total unemployed, January 2008 to January 2018**



## BENEFITS FOR OTHER TREND SERIES

Since the benefits to improving trend are greatest for Labour Force statistics, this change has been implemented in these series first, ahead of further changes across the range of economic statistics produced by the ABS. Information on when changes will be made to other trend series will be published in their respective statistical releases, over time.

## **FURTHER INFORMATION**

For any queries regarding the implementation of these changes contact the National Information Referral Service on 1300 135 070, or via e-mail at [client.services@abs.gov.au](mailto:client.services@abs.gov.au).

## **Article Archive**

This section provides an archive of articles and analysis published in Labour Force, Australia (cat. no. 6202.0) and Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) and Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003), promoting the effective use of labour force statistics. Articles are sorted by publication month.

Articles on labour related topics are also available in Australian Labour Market Statistics (cat. no. 6105.0) and Australian Social Trends (cat. no. 4102.0).

## **LABOUR FORCE SURVEY ARCHIVE**

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#### **March**

What's New in the Labour Force (cat. no 6202.0)

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Improvements to Trend Estimation (cat. no. 6202.0)

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Unemployed Persons,Trend Estimates (cat. no. 6202.0)

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Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

## **May**

What's New in the Labour Force (cat. no. 6291.0.55.003)

Employment and mining in Queensland, New South Wales and Western Australia (cat. no. 6202.0)

Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

#### **April**

Population Benchmarks and Labour Force Survey (cat. no. 6202.0, cat. no. 6291.0.55.001)

ABS Response to recent concerns expressed about employment estimates (cat. no. 6202.0)

Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

#### **March**

Annual Seasonal Reanalysis (cat. no. 6202.0)

Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

#### **February**

Exploring Labour Force Data on joblessness (cat. no. 6202.0)

Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001)

#### **January**

Employment level estimates versus employment to population explained (cat. no. 6202.0)

### **2011**

#### **November**

Understanding Labour Force (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

Aggregate monthly hours worked, Trend estimates (cat. no. 6202.0)

Underemployment rate, Trend estimates (cat. no. 6202.0)

Labour force underutilisation rate, Trend estimates (cat. no. 6202.0)

#### **February**

Historical Revisions (cat. no. 6202.0, cat. no. 6291.0.55.001, cat. no. 6291.0.55.003)

#### **January**

Impact of the floods on the Labour Force Survey (cat. no. 6202.0, cat. no. 6291.0.55.001)

Employed Persons, Trend estimates (cat. no. 6202.0)

Unemployed Persons, Trend estimates (cat. no. 6202.0)

## **About this Release**

A range of Labour Force related Excel spreadsheets and Excel pivot tables. The monthly spreadsheets contain broad level data covering all the major items of the Labour Force Survey in time series format, including seasonally adjusted and trend estimates. The monthly pivot tables contain more detailed and cross classified original data than the spreadsheets.

## **History of Changes**

**26/04/2018** An issue was identified with the display of trend and seasonally adjusted duration of unemployment data in Table 14b, which has now been corrected.

# Explanatory Notes

## Explanatory Notes

Data from the monthly Labour Force Survey are released in two stages. The Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) and Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003) are part of the second release, and include detailed data not contained in the Labour Force, Australia (cat. no. 6202.0) product set, which is released one week earlier.

The Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) is released monthly. Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003) includes data only collected in February, May, August and November (including industry and occupation).

Since these products are based on the same data as the Labour Force, Australia (cat. no. 6202.0) publication, the 6202.0 Labour Force, Australia Explanatory Notes are relevant to both releases.

## Quality Declaration - Summary

### QUALITY DECLARATION - SUMMARY

#### INSTITUTIONAL ENVIRONMENT

Labour Force statistics are compiled from the Labour Force Survey which is conducted each month throughout Australia as part of the Australian Bureau of Statistics (ABS) household survey program. For information on the institutional environment of the Australian Bureau of Statistics (ABS), including the legislative obligations of the ABS, financing and governance arrangements, and mechanisms for scrutiny of ABS operations, please see ABS Institutional Environment.

#### RELEVANCE

The Labour Force Survey provides monthly information about the labour market activity of Australia's resident civilian population aged 15 years and over. The Labour Force Survey is designed to primarily provide estimates of employment and unemployment for the whole of Australia and, secondarily, for each state and territory.

#### TIMELINESS

The Labour Force Survey enumeration begins on the Sunday between the 5th and 11th of the month, except for the Christmas and New Year holiday period. In December enumerations starts between the 3rd and 9th (4 weeks after November enumeration begins). In January enumeration starts between the 7th and 13th (5 weeks after December enumeration begins).

Key estimates from the Labour Force Survey are published in two stages. The first, Labour Force, Australia (cat. no. 6202.0), is released 39 days after the commencement of enumeration for the month, with the exception of estimates for December which are published 46 days after the commencement of enumeration.

The second stage includes detailed data that were not part of the first stage and are published in Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) and Labour

Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003). The second stage is released 7 days after the first stage.

## **ACCURACY**

The Labour Force Survey is based on a sample of private dwellings (approximately 26,000 houses, flats etc) and non-private dwellings, such as hotels and motels. The sample covers about 0.32% of the Australian civilian population aged 15 years or over. The Labour Force Survey is designed primarily to provide estimates of key labour force statistics for the whole of Australia and, secondarily, for each state and territory.

Two types of error are possible in an estimate based on a sample survey: non-sampling error and sampling error.

Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures. Non-sampling error also arises because information cannot be obtained from all persons selected in the survey. The Australian Labour Force Survey receives a higher level of co-operation from individuals in selected dwellings compared to other countries, with the average response rate over the past 3 years being 93.25 per cent, and the average rate over the past year being 92.5 per cent (to the nearest quarter of a per cent, in rounded terms). See Glossary for definition of response rate.

Sampling error occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all dwellings in the survey is given by the standard error. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if all dwellings had been included in the survey, and about nineteen chances in twenty that the difference will be less than two standard errors.

Standard errors of key estimates and movements since the previous month are available in Labour Force, Australia (cat. no. 6202.0). The standard error of other estimates and movements may be calculated by using the spreadsheet contained in Labour Force Survey Standard Errors, Data Cube (cat. no. 6298.0.55.001).

## **COHERENCE**

The ABS has been conducting the Labour Force Survey each month since February 1978. While seeking to provide a high degree of consistency and comparability over time by minimising changes to the survey, sound survey practice requires careful and continuing maintenance and development to maintain the integrity of the data and the efficiency of the collection.

The changes which have been made to the Labour Force Survey have included changes in sampling methods, estimation methods, concepts, data item definitions, classifications, and time series analysis techniques. In introducing these changes the ABS has generally revised previous estimates to ensure consistency and coherence with current estimates. For a full list of changes made to the Labour Force Survey see Chapter 20 in Labour Statistics: Concepts, Sources and Methods (cat. no. 6102.0.55.001).

## **INTERPRETABILITY**

The ABS has been conducting the Labour Force Survey each month since February 1978. While seeking to provide a high degree of consistency and comparability over time by minimising changes to the survey, sound survey practice requires careful and continuing maintenance and

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## **ACCESSIBILITY**

Please see the Related Information tab for the list of products that are available from this collection.

## **Time Series Spreadsheet (I-Note) - Time Series Spreadsheet**

The median data that were previously released in SuperTable data cubes have been converted to time series spreadsheets 14c, 14d, 14e and 16c, to reduce the complexity of pivot table products.

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## **Time Series Spreadsheet (I-Note) - Time Series Spreadsheet**

For advice on reporting data from this product, please refer to: Advice on reporting regional labour force data.

Due to the flooding in Queensland in January 2011, the relative standard errors for January 2011 will vary across regions and will be higher than normal in some regions. The RSEs for the Darling Downs-South West and Ipswich City Statistical Regions are expected to be approximately 50% higher, while the RSEs for the Brisbane City Inner Ring Statistical Region will increase by approximately 25%. The Brisbane City Outer Ring, West Moreton and Mackay-Fitzroy-Central West Statistical Regions will have RSEs approximately 10% higher. All other regions have minimal differences. However from February 2011, the data returns to normal. Refer to the article Impact of the floods on the Labour Force Survey in January 2011 for more information.

The new labour force sample was phased-in over four months from May to August 2013. See the article on page 10 of the May 2013 issue of Labour Force, Australia (cat. no. 6202.0) for more information. During phase in of the new sample, standard errors associated with key labour force data were expected to increase by approximately 10% at a national level, however increased standard errors and variability in the estimates may be more evident in detailed regional data during this time.

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## **Data Cubes (I-Note) - Data Cubes**

For advice on reporting data from this product, please refer to: Advice on reporting regional labour force data.

Due to the flooding in Queensland in January 2011, the relative standard errors for January 2011 will vary across regions and will be higher than normal in some regions. The RSEs for the Darling Downs-South West and Ipswich City Statistical Regions are expected to be approximately 50% higher, while the RSEs for the Brisbane City Inner Ring Statistical Region will increase by approximately 25%. The Brisbane City Outer Ring, West Moreton and Mackay-Fitzroy-Central West Statistical Regions will have RSEs approximately 10% higher. All other regions have minimal differences. However from February 2011, the data returns to normal. Refer to the article Impact of the floods on the Labour Force Survey in January 2011 for more information.

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The new labour force sample was phased-in over four months from May to August 2013. See the article on page 10 of the May 2013 issue of Labour Force, Australia (cat. no. 6202.0) for more information. During phase in of the new sample, standard errors associated with key labour force data were expected to increase by approximately 10% at a national level, however increased standard errors and variability in the estimates may be more evident in detailed regional data during this time.

## **Standard Errors**

Estimates from the Labour Force Survey (LFS) are based on information collected from people in a sample of dwellings, rather than the entire population. Hence the estimates produced may differ from those that would have been produced if the entire population had been included in the survey. The most common measure of the likely difference (or 'sampling error') is the standard error (SE).

The ABS considers that estimates with a relative standard error of 25% or more may be subject to sampling variability too high for most practical purposes.

To indicate those cells in spreadsheets with a relative standard error of 25% or more, annotations have been applied prior to dissemination.

In addition, the tables below have been supplied to show estimates at which the relative standard error is 25%. Estimates of the size indicated in the tables, or smaller, are considered to be subject to sampling variability too high for most practical purposes.

Due to the January 2011 flooding in Queensland the relative standard errors for January 2011 will be higher than normal in some regions, therefore for Queensland the estimates at which the relative standard error is 25% will be higher than they appear in the tables below. However from February, the data returns to normal.

The new labour force sample was phased-in over four months from May to August 2013. During phase in of the new sample, standard errors associated with key labour force data were expected to increase by approximately 10% at a national level, however increased standard errors and variability in the estimates may be more evident in detailed regional data during this time.

The RSEs for July 2013 (50% old sample, 50% new sample) and onwards will be subject to revisions in the future, as more information is known about the new sample after it has been introduced.

Additional information on how standard errors for LFS estimates are produced is available in Labour Force Survey Standard Errors, Data Cube (cat. no. 6298.0.55.001).

State	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust
<b>Employed</b>									
Feb-78 — Sep-82	4.5	4.5	3.5	2.5	2.5	1.5	1.8	2.0	4.5
Oct-82 — Aug-87	4.0	4.0	3.0	1.8	2.0	1.0	1.8	1.3	3.5
Sep-87 — Feb-89	4.5	4.5	3.0	2.0	2.5	1.3	1.8	1.5	4.0
Mar-89 — Aug-92	4.5	4.5	3.0	2.1	2.3	1.3	2.0	1.4	3.5
Sep-92 — Aug-97	5.3	4.6	3.5	2.4	2.9	1.3	1.3	1.0	4.0
Sep-97 — Sep-98	5.9	4.5	4.1	2.4	2.8	1.1	1.0	1.1	4.4
Oct-98 — Feb-03	5.9	3.1	3.7	2.5	2.2	1.1	1.3	0.9	5.5
Mar-03 — Oct-07	6.3	3.0	4.4	2.3	2.5	1.3	1.5	1.1	6.6
Nov-07	6.2	3.2	4.3	2.3	2.5	1.3	1.4	1.1	6.4
Dec-07	6.1	3.4	4.3	2.3	2.6	1.3	1.3	1.1	6.2
Jan-08	6.0	3.6	4.2	2.3	2.6	1.3	1.3	1.2	6.0
Feb-08	5.9	3.8	4.2	2.4	2.7	1.3	1.2	1.2	5.9
Mar-08	5.9	4.1	4.2	2.4	3.0	1.2	1.1	1.2	5.7
Apr-08	5.8	4.4	4.4	2.5	3.1	1.3	1.0	1.3	5.6
May-08	5.7	4.7	4.3	2.5	3.1	1.3	1.0	1.3	5.4
Jun-08	5.5	4.9	4.3	2.5	3.3	1.3	1.0	1.3	5.3
Jul-08 — Aug-09	6.9	6.1	5.3	3.1	4.0	1.5	1.2	1.6	7.4
Sep-09	6.5	5.8	5.0	2.9	3.8	1.5	1.1	1.5	7.0
Oct-09	6.1	5.5	4.7	2.8	3.6	1.4	1.0	1.4	6.5
Nov-09	5.8	5.2	4.5	2.6	3.4	1.3	1.0	1.4	6.2
Dec-09 — Jun-13	5.5	4.9	4.3	2.5	3.3	1.3	1.0	1.3	5.8
Jul-13 — Jan-14	7.7	3.8	5.5	2.7	3.8	1.4	0.3	1.7	7.8
Feb-14 onwards	7.9	3.9	5.6	2.7	3.8	1.4	0.3	1.7	7.9
<b>Unemployed</b>									
Feb-78 — Sep-82	4.5	4.5	3.5	2.5	2.5	1.5	1.8	2.0	4.5
Oct-82 — Aug-87	4.0	4.0	3.0	1.8	2.0	1.0	1.8	1.3	3.5
Sep-87 — Feb-89	4.5	4.5	3.0	2.0	2.5	1.3	1.8	1.5	4.0
Mar-89 — Aug-92	4.5	4.5	3.0	2.1	2.3	1.3	2.0	1.4	3.5
Sep-92 — Aug-97	5.3	4.6	3.5	2.4	2.9	1.3	1.3	1.0	4.0
Sep-97 — Sep-98	5.9	4.5	4.1	2.4	2.8	1.1	1.0	1.1	4.4
Oct-98 — Feb-03	5.7	5.7	4.5	2.6	3.3	1.3	3.2	1.4	4.9
Mar-03 — Oct-07	6.0	5.4	4.9	2.9	3.6	1.6	2.2	1.6	5.2

Nov-07	6.1	5.4	5.0	2.9	3.7	1.6	2.1	1.7	5.2
Dec-07	6.2	5.5	5.0	2.9	3.8	1.7	1.9	1.7	5.2
Jan-08	6.3	5.6	5.0	3.0	4.0	1.7	1.8	1.8	5.2
Feb-08	6.4	5.7	5.1	3.0	4.1	1.7	1.7	1.8	5.1
Mar-08	6.7	5.7	5.2	3.1	4.5	1.8	1.6	1.9	5.1
Apr-08	6.8	5.9	5.5	3.2	4.6	1.9	1.5	1.9	5.2
May-08	6.9	6.0	5.5	3.3	4.8	1.9	1.4	2.0	5.1
Jun-08	7.1	6.1	5.6	3.3	5.0	1.9	1.4	2.1	5.1
Jul-08 — Aug-09	9.3	8.0	7.4	4.4	6.6	2.5	1.8	2.8	7.3
Sep-09	8.7	7.5	6.8	4.1	6.1	2.4	1.6	2.5	6.8
Oct-09	8.1	7.0	6.4	3.8	5.7	2.2	1.5	2.4	6.4
Nov-09	7.5	6.5	6.0	3.5	5.3	2.1	1.5	2.2	6.0
Dec-09 — Jun-13	7.1	6.1	5.6	3.3	5.0	1.9	1.4	2.1	5.7
Jul-13 — Jan-14	7.3	6.6	8.4	3.7	5.8	1.7	1.3	2.2	7.1
Feb-14 onwards	7.4	6.7	8.6	3.8	5.9	1.8	1.3	2.3	7.3

#### NILF

Feb-78 — Sep-82	4.5	4.5	3.5	2.5	2.5	1.5	1.8	2.0	4.5
Oct-82 — Aug-87	4.0	4.0	3.0	1.8	2.0	1.0	1.8	1.3	3.5
Sep-87 — Feb-89	4.5	4.5	3.0	2.0	2.5	1.3	1.8	1.5	4.0
Mar-89 — Aug-92	4.5	4.5	3.0	2.1	2.3	1.3	2.0	1.4	3.5
Sep-92 — Aug-97	5.3	4.6	3.5	2.4	2.9	1.3	1.3	1.0	4.0
Sep-97 — Sep-98	5.9	4.5	4.1	2.4	2.8	1.1	1.0	1.1	4.4
Oct-98 — Feb-03	6.4	3.7	4.1	3.2	2.7	1.2	1.4	1.1	6.0
Mar-03 — Oct-07	7.8	3.7	5.2	3.0	3.2	1.5	2.0	1.3	7.3
Nov-07	7.6	3.9	5.1	3.0	3.2	1.5	1.8	1.3	7.0
Dec-07	7.4	4.1	5.1	3.0	3.3	1.5	1.7	1.4	6.8
Jan-08	7.3	4.4	5.0	3.0	3.4	1.5	1.6	1.4	6.6
Feb-08	7.1	4.7	5.0	3.1	3.5	1.5	1.5	1.4	6.3
Mar-08	7.1	5.0	4.9	3.1	3.8	1.5	1.3	1.5	6.2
Apr-08	7.0	5.4	5.3	3.2	3.9	1.5	1.2	1.5	6.0
May-08	6.8	5.7	5.2	3.2	4.0	1.5	1.1	1.6	5.8
Jun-08	6.6	6.0	5.2	3.2	4.1	1.5	1.1	1.6	5.6
Jul-08 — Aug-09	8.3	7.6	6.5	4.0	5.2	1.8	1.4	2.0	8.0
Sep-09	7.8	7.2	6.1	3.7	4.9	1.7	1.3	1.9	7.4
Oct-09	7.3	6.7	5.8	3.5	4.6	1.6	1.2	1.8	6.9
Nov-09	6.9	6.4	5.4	3.3	4.4	1.6	1.2	1.7	6.5
Dec-09 — Jun-13	6.6	6.0	5.2	3.2	4.1	1.5	1.1	1.6	6.2
Jul-13 — Jan-14	8.4	4.4	9.8	3.6	4.5	1.8	0.7	2.5	9.0
Feb-14 onwards	8.5	4.5	9.9	3.7	4.6	1.8	0.8	2.5	9.1

Greater Capital City Statistical Areas	Feb-78 — Sep-82	Oct-82 — Aug-87	Sep-87 — Feb-89	Mar-89 — Aug-92	Sep-92 — Aug-97	Sep-97 — Sep-98	Oct-98 — Feb-03
Greater Sydney	4.5	4.0	4.5	4.5	5.3	5.7	5.8
Rest of NSW	4.5	4.0	4.5	4.5	5.3	5.7	5.8
Greater Melbourne	4.5	4.0	4.5	4.5	4.6	4.6	3.3
Rest of Victoria	4.5	4.0	4.5	4.5	4.6	4.3	3.2
Greater Brisbane	3.5	3.0	3.0	3.0	3.5	3.7	3.4
Rest of Queensland	3.5	3.0	3.0	3.0	3.6	4.3	3.6
Greater Adelaide	2.5	1.8	2.0	2.1	2.4	2.4	2.7
Rest of South Australia	2.5	1.8	2.0	2.1	2.5	2.2	2.5
Greater Perth	2.5	2.0	2.5	2.3	2.9	2.6	2.3
Rest of Western Australia	2.5	2.0	2.5	2.3	2.9	2.8	2.2
Greater Hobart	1.5	1.0	1.3	1.3	1.3	1.1	0.9
Rest of Tasmania	1.5	1.0	1.3	1.3	1.3	1.1	1.1
	Mar-03 — Feb-08	Mar-08 — Jun-08	Jul-08 — Oct-09	Nov-09 — Jun-13	Jul-13 — Jan-14	Feb -14 onwards	
Greater Sydney	6.5	5.7	7.1	5.7	7.6	7.7	
Rest of NSW	6.4	5.6	7.0	5.6	7.5	7.6	
Greater Melbourne	3.2	5.1	6.4	5.1	4.0	4.0	
Rest of Victoria	3.1	5.0	6.3	5.0	3.9	3.9	
Greater Brisbane	4.1	4.0	5.0	4.0	5.9	6.0	
Rest of Queensland	4.4	4.3	5.4	4.3	6.3	6.4	
Greater Adelaide	2.5	2.7	3.4	2.7	3.0	3.0	
Rest of South Australia	2.4	2.5	3.1	2.5	2.8	2.8	
Greater Perth	2.6	3.5	4.3	3.5	3.9	4.0	
Rest of Western Australia	2.5	3.3	4.1	3.3	3.7	3.8	
Greater Hobart	1.1	1.1	1.4	1.1	1.3	1.3	
Rest of Tasmania	1.3	1.3	1.6	1.3	1.5	1.5	

Statistical Area Level 4 Regions	Oct-98 — Feb-03	Mar-03 — Feb-08	Mar-08 — Jun-08	Jul-08 — Oct-09	Nov-09 — Jun-13	Jul-13 — Jan-14	Feb-14 onwards
Central Coast	7.4	8.5	7.2	9.4	7.2	10.2	10.4
Sydney - Baulkham Hills and Hawkesbury	7.2	8.3	7.0	9.2	7.0	10.0	10.2
Sydney - Blacktown	7.3	8.3	7.1	9.3	7.1	10.0	10.2
Sydney - City and Inner South	8.5	9.7	8.3	10.8	8.3	11.7	11.9
Sydney - Eastern Suburbs	9.6	11.0	9.3	12.2	9.3	13.1	13.4
Sydney - Inner South West	7.3	8.4	7.1	9.3	7.1	10.1	10.3
Sydney - Inner West	7.7	8.8	7.5	9.8	7.5	10.6	10.8
Sydney - North Sydney and Hornsby	7.6	8.6	7.3	9.6	7.3	10.4	10.6
Sydney - Northern Beaches	7.8	8.9	7.6	9.9	7.6	10.7	10.9
Sydney - Outer South West	7.3	8.4	7.1	9.3	7.1	10.1	10.3
Sydney - Outer West and Blue Mountains	7.3	8.3	7.1	9.3	7.1	10.0	10.2
Sydney - Parramatta	7.8	8.9	7.6	10.0	7.6	10.8	11.0
Sydney - Ryde	7.7	8.8	7.5	9.8	7.5	10.6	10.8
Sydney - South West	7.5	8.6	7.3	9.6	7.3	10.4	10.6
Sydney - Sutherland	7.4	8.4	7.2	9.4	7.2	10.1	10.3
Capital Region	7.2	8.2	7.0	9.2	7.0	9.9	10.1
Central West	7.6	8.7	7.4	9.7	7.4	10.5	10.7
Coffs Harbour - Grafton	7.6	8.7	7.4	9.7	7.4	10.5	10.7
Far West and Orana	7.4	8.4	7.2	9.4	7.2	10.1	10.3
Hunter Valley exc Newcastle	7.1	8.1	6.9	9.0	6.9	9.8	10.0
Illawarra	7.6	8.7	7.4	9.7	7.4	10.5	10.7
Mid North Coast	7.5	8.6	7.3	9.6	7.3	10.3	10.6
Murray	7.6	8.6	7.4	9.6	7.4	10.4	10.6
New England and North West	7.6	8.7	7.4	9.7	7.4	10.5	10.7
Newcastle and Lake Macquarie	7.1	8.1	6.9	9.0	6.9	9.8	9.9
Richmond - Tweed	7.6	8.7	7.4	9.7	7.4	10.5	10.7
Riverina	7.6	8.6	7.4	9.6	7.4	10.4	10.6
Southern Highlands and Shoalhaven	9.0	10.3	8.7	11.4	8.7	12.3	12.6
Melbourne - Inner	4.1	3.9	7.2	9.4	7.2	5.2	5.3
Melbourne - Inner East	3.6	3.4	6.2	8.2	6.2	4.5	4.6
Melbourne - Inner South	3.7	3.5	6.4	8.4	6.4	4.7	4.8
Melbourne - North East	3.8	3.6	6.6	8.6	6.6	4.8	4.9
Melbourne - North West	3.7	3.6	6.5	8.6	6.5	4.7	4.8
Melbourne - Outer East	3.8	3.6	6.6	8.7	6.6	4.8	4.9
Melbourne - South East	3.6	3.4	6.3	8.3	6.3	4.6	4.7
Melbourne - West	3.5	3.4	6.1	8.1	6.1	4.4	4.5
Mornington Peninsula	3.6	3.5	6.4	8.3	6.4	4.6	4.7
Ballarat	4.0	3.8	6.9	9.1	6.9	5.0	5.1
Bendigo	3.8	3.7	6.7	8.8	6.7	4.9	5.0
Geelong	3.7	3.5	6.5	8.5	6.5	4.7	4.8
Hume	4.3	4.1	7.4	9.7	7.4	5.4	5.5
Latrobe - Gippsland	4.1	3.9	7.2	9.4	7.2	5.2	5.3
North West	3.9	3.7	6.8	8.9	6.8	4.9	5.0
Shepparton	4.3	4.1	7.4	9.7	7.4	5.4	5.5
Warrnambool and South West	3.7	3.5	6.5	8.5	6.5	4.7	4.8
Brisbane - East	4.1	5.1	5.1	6.7	5.1	8.1	8.2
Brisbane - North	4.1	5.2	5.1	6.7	5.1	8.1	8.3
Brisbane - South	4.2	5.2	5.2	6.8	5.2	8.2	8.4
Brisbane - West	4.1	5.2	5.1	6.7	5.1	8.2	8.3
Brisbane Inner City	4.2	5.3	5.3	6.9	5.3	8.4	8.6
Ipswich	4.0	5.0	5.0	6.5	5.0	7.9	8.1
Logan - Beaudesert	4.3	5.4	5.3	7.0	5.3	8.4	8.6
Moreton Bay - North	3.9	4.9	4.8	6.4	4.8	7.7	7.9
Moreton Bay - South	3.9	4.9	4.8	6.3	4.8	7.7	7.9
Cairns	4.9	6.2	6.1	8.0	6.1	9.7	9.9
Darling Downs - Maranoa	4.6	5.8	5.7	7.5	5.7	9.1	9.3
Fitzroy	4.2	5.3	5.2	6.9	5.2	8.3	8.5
Gold Coast	4.3	5.5	5.4	7.1	5.4	8.6	8.7
Mackay	4.2	5.3	5.2	6.9	5.2	8.3	8.5
Queensland - Outback	4.7	5.9	5.8	7.6	5.8	9.2	9.4
Sunshine Coast	4.3	5.4	5.3	7.0	5.3	8.5	8.7
Toowoomba	4.6	5.8	5.7	7.5	5.7	9.0	9.2
Townsville	4.7	5.9	5.8	7.6	5.8	9.2	9.4

Wide Bay	4.6	5.8	5.7	7.5	5.7	9.0	9.2
Adelaide - Central and Hills	3.3	3.1	3.3	4.3	3.3	3.7	3.8
Adelaide - North	3.3	3.0	3.3	4.3	3.3	3.7	3.8
Adelaide - South	3.4	3.1	3.4	4.4	3.4	3.8	3.9
Adelaide - West	3.7	3.4	3.7	4.8	3.7	4.1	4.2
Barossa - Yorke - Mid North	3.5	3.2	3.5	4.5	3.5	3.9	4.0
South Australia - Outback	3.7	3.4	3.7	4.8	3.7	4.1	4.2
South Australia - South East	3.1	2.8	3.1	4.0	3.1	3.5	3.5
Mandurah	2.4	2.8	4.0	5.2	4.0	4.6	4.7
Perth - Inner	3.1	3.5	4.9	6.5	4.9	5.8	5.9
Perth - North East	2.9	3.3	4.6	6.1	4.6	5.4	5.5
Perth - North West	2.8	3.2	4.5	5.9	4.5	5.2	5.3
Perth - South East	2.9	3.3	4.7	6.1	4.7	5.5	5.6
Perth - South West	2.7	3.1	4.3	5.7	4.3	5.0	5.1
Bunbury	2.4	2.8	4.0	5.2	4.0	4.6	4.7
Western Australia - Outback	2.8	3.3	4.6	6.0	4.6	5.4	5.5
Western Australia - Wheat Belt	2.6	3.0	4.2	5.5	4.2	4.9	5.0
Greater Hobart	0.9	1.1	1.1	1.4	1.1	1.3	1.3
Launceston and North East	1.3	1.5	1.5	1.9	1.5	1.7	1.8
Tasmania - South East	1.6	1.9	1.9	2.4	1.9	2.2	2.2
Tasmania - West and North West	1.3	1.6	1.6	2.0	1.6	1.8	1.8
Darwin	1.4	1.7	1.0	1.3	1.0	0.9	0.9
Northern Territory - Outback	1.4	1.7	1.0	1.3	1.0	0.9	0.9

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